**WE CLAIM:**

1. A method for making a structure, at least a portion of which is intermetallic, the method comprising:

providing at least one machinable intermetallic lamina;

machining the at least one machinable intermetallic lamina to form a machined intermetallic lamina;

stacking and registering the at least one machined intermetallic lamina with at least one other lamina selected from the group of patterned lamina, non-patterned lamina and combinations thereof, thereby forming a registered stack; and

processing the registered stack to make an intermetallic structure.

2. The method according to claim 1 where the intermetallic lamina is a nickel aluminide.

3. The method according to claim 2 where the nickel aluminide is NiAl.

4. The method according to claim 2 where the nickel aluminide is $Ni_3Al$.

5. The method according to claim 1 where the intermetallic lamina is an iron aluminide.

6. The method according to claim 5 where the iron aluminide is FeAl.

7. The method according to claim 5 where the iron aluminide is $Fe_3Al$.

8. The method according to claim 1 where the intermetallic lamina is a titanium aluminide.

9. The method according to claim 8 where the titanium aluminide is TiAl.

10. The method according to claim 8 where the titanium aluminide is $Ti_3Al$.

11. The method according to claim 1 further comprising adding at least one bonding lamina or layer to the registered stack to facilitate bonding between a first intermetallic lamina and a second intermetallic lamina.

12. The method according to claim 11 where the bonding lamina is substantially pure nickel.

13. The method according to claim 12 where the bonding lamina has a thickness of from about 5 to about 10 microns.

14. The method according to claim 1 where machining is a technique selected from the group consisting of lithography, laser ablation, electrochemical processes, chemical etching, plasma etching, mechanical cutting, hydraulic processes, solid abrasion, particle beam, ultrasonic processes; electromagnetic processes, including momentum transfer and energy transfer from any portion of the electromagnetic spectrum, wire and ram electrodischarge (EDM), waterjet and abrasive waterjet, precision plasma cutting, and combinations thereof.

15. The method according to claim 1 where providing comprises procuring a patterned lamina or lamina blank.

16. The method according to claim 1 further comprising providing at least a second lamina in addition to the at least one machinable intermetallic lamina, the second lamina comprising at least a first metal layer and a second metal layer.

17. The method according to claim 16 where each of the first and second metal layers comprises a substantially pure element prior to heat treatment.

18. The method according to claim 17 where the second lamina comprises three metal layers.

19. The method according to claim 18 where one of the layers comprises an element different from the other two layers.

20. The method according to claim 19 where one of the layers is selected from the group consisting of substantially pure iron, nickel, titanium and aluminum.

21. The method according to claim 18 wherein two of the layers are substantially pure aluminum, and one layer is substantially pure nickel.

22. The method according to claim 18 where two of the layers are substantially pure aluminum, and one layer is substantially pure titanium.

23. The method according to claim 1 where coupling is accomplished using an adhesive applied between two or more laminae.

24. The method according to claim 17 where processing comprises vacuum heating at a temperature and for a length of time sufficient to form an intermetallic.

25. The method according to claim 16 where processing further comprises liquid-phase bonding.

26. The method according to claim 16 where processing further comprises diffusion bonding.

27. The method according to claim 1 wherein the intermetallic structure includes one or more catalysts operatively associated therewith.

28. An intermetallic device made according to the method of claim 1.

29. A device comprising a patterned intermetallic portion.

30 The device according to claim 29 selected from the group consisting of micromechanical systems, microelectromechanical systems, miniature energy and chemical systems, microthermal systems, microthermomechanical systems, cryocoolers, Stirling cycle cryocoolers, heat pumps, compressors, thermal compressors, refrigerators, heat engines, valves, nozzled valves, ink jet print head valves, fuel cells, fuel combustors, fuel processors, electromagnetic systems, electromagnetically enhanced systems, magnetic systems, magnetically enhanced systems, and systems comprising one or more of these devices.

31. A method for making an intermetallic structure, comprising:
providing a plurality of stacked and registered laminae; and
heat processing the stacked and registered laminae to form a monolithic structure comprising an intermetallic.

32 The method according to claim 31where at least one of the plurality of stacked and registered laminae is a patterned intermetallic lamina.

33. The method according to claim 31where at least one lamina of the plurality of stacked and registered laminae comprises at least a first metal layer and a second metal layer.

34 The method according to claim 33where the at least one lamina is patterned prior to heat processing.

35 The method according to claim 31where at least a first lamina of the plurality of stacked and registered laminae is a patterned intermetallic lamina, and where at least a second lamina of the plurality of stacked and registered laminae comprises at least a first metal layer and a second metal layer.

36 The method according to claim 35where the second lamina is patterned prior to heat processing.

37 The method according to claim 31where at least two adjacent lamina are connected by at least one post.

38 The method according to claim 31 further comprising operatively associating at least one catalyst with the structure.

39. The method according to claim 32 where the intermetallic lamina is pattered using a technique selected from the group consisting of lithography, laser ablation, electrochemical means, chemical etching, plasma etching, mechanical cutting, hydraulic means, solid abrasion, particle beam, ultrasonic means; electromagnetic means, wire and ram electrodischarge (EDM), waterjet and abrasive waterjet, precision plasma cutting, and combinations thereof.

40. The method according to claim 32 where the intermetallic portion is a nickel aluminide.

41. The method according to claim 32 where the intermetallic portion is an iron aluminide.

42. The method according to claim 32 where the intermetallic portion is a titanium aluminide.

43. The method according to claim 31 where at least one of the lamina in the registered stack of laminae comprises a metal selected from the group consisting of aluminum, nickel, titanium, molybdenum, tantalum, copper, gold, silver, lead, tin, iron, antimony, magnesium, manganese, bismuth, germanium, tungsten, binary alloys thereof, binary

intermetallics thereof, ternary alloys thereof, ternary intermetallics thereof, and combinations thereof.

44. The method according to claim 43 where the metal is a metal foil.

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45. The method according to claim 31 where the stacked lamina comprise plural intermetallic foils.